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SOME PRACTICAL ASPECTS OF EPIDURAL ANAESTHESIA IN THE DOG*

BY

A. M. HARTHOORN AND W. BRASS†

INTRODUCTION

The technique of epidural (interdural) anaesthesia in the dog is not new, and has been described by Wright (1947); Benesch (1932); Benesch & Kostner (1942); and by Brook (1936). Early essays to induce anaesthesia by way of the spinal cord go back to the last century, and Evans (1949) cites a report by Corning on this subject which appeared in the *New York Medical Journal* as long ago as 1885. Hitherto, the principal use of epidural anaesthesia in veterinary practice has been to induce regional anaesthesia in larger animals, especially in the ruminant. The performance of laparotomy and many other operations under local anaesthesia is not permitted under the Animals Anaesthetic Act of 1919. The possibilities of performing operations such as caesarean section under local anaesthesia, however, are not only rendered practical by what, we may now hope, is pending legislation, but often have been discussed as a matter of interest in the pages of this journal (*e.g.*, Walsby, 1952), and in the same spirit we would like to forward this report on the results of conducting operations on the dog under morphine/epidural anaesthesia.

Epidural anaesthesia in the dog has advantages over general anaesthesia in operations on debilitated animals, and especially for the purpose of caesarean section where living whelps are desired. It has been used clinically for every type of operation over a large number of cases, some 300 of which were carefully recorded.

One of us (W. B.) has personally induced this form of anaesthesia in more than 80 cases. Although no statistics are available comparing the survival figures following operations under epidural anaesthesia with those under any particular form of general anaesthesia, a strong impression has been gained that the mortality resulting from operations under epidural anaesthesia is less than that which follows after the use of general anaesthesia. Deaths directly due to the anaesthetic, for instance, have not been observed as a result of epidural anaesthesia.

TECHNIQUE OF ADMINISTRATION

The technique of epidural anaesthesia in the dog has been adequately described previously (Wright; Benesch & Kostner; Brook). It will therefore be necessary to mention only a few practical details.

The animal is restrained on the table in the natural "crouching" position, *i.e.*, the ventral surface is in contact with the table, the front legs are stretched forward, and the hind legs are gathered under the body with the plantar surface applied to the table top. The assistant stands with his back in the direction that the dog is facing. The dog's head or neck is under one arm, the elbows are pressed against the dog's shoulders, and the hands grip the hind legs above the hock. Slight traction is exerted on the hind legs to bring them well under the body and so to induce a slight curve in the spine to facilitate introduction of the needle.

There are two possible sites for the introduction of the epidural anaesthetic. One is between the last two lumbar vertebrae, and second is the space between the last lumbar vertebra and the sacrum.

In all but very fat animals, the injection site for the latter position may readily be found just posterior to the line joining the two prominences of the ilium. A depression may be felt between the last lumbar spinous process and the sacral crest, which is the easier and more expedient site for injection. The space here comprises an oval, approximately 1 cm. long by 2 cm. wide in a dog of average size (that between the sixth and seventh lumbar vertebra is only several millimetres in diameter). After the site has been depilated, defatted and disinfected, the needle is introduced with the bevel facing anteriorly, straight downwards until the typical resistance of the interarcual ligament is felt. The needle is then pushed through and the trochar withdrawn. It is advisable to wait a few moments to see if blood or liquor emerges. In either case the needle is withdrawn slightly as this means that either one of the parallel vessels connecting with the ventral occipital sinus, or else the *filum terminale*, has been punctured. As the filum at this juncture has a thickness of only 1 mm., and is surrounded by a roomy epidural space filled with fatty connective tissue, the chances of entering the *filum terminale* are extremely small.

For adequate control, a long needle should be used: a length of 3½ cm. for a dog of approximately 20 lb. bodyweight. For larger dogs a needle of 7 cm. length and a thickness of 1 mm. may be used. Little resistance to injection will be felt if the needle is correctly placed, although the resistance may be slightly enhanced in fat animals. It has been found that in the occasional case where no anaesthesia ensues, the needle may be reintroduced and the full anaesthetic dose readministered without any ill effects. It has been assumed that in each case the lack of anaesthesia was due to the misplacement of the anaesthetic solution.

The anaesthetic dose may be given fairly rapidly, and the time taken was usually about one minute. After injection, the needle is removed while slight pressure is still applied to the syringe. If this is neglected some of the anaesthetic solution will tend to flow back out of the needle. The animal is then placed on its back until the anaesthetic has taken effect. This takes about five minutes and manifests itself by relaxation of the anal sphincter, tail and the hind legs. When the relaxation appears optimum, the animal is placed in the position required for the operation. Although it has been experimentally shown to be unnecessary (Siekmann, 1952), the head is always placed slightly higher than the body. If the subject is to be operated on in lateral or prone recumbency a supine position should be maintained for 10 minutes subsequent to induction.

The term *epidural* anaesthesia refers rather to the mode of injection than to the site of the nerve block. Goodman & Gilman (1941) think that the action of the anaesthetic on the nerve is where the latter leaves the intervertebral foramen and where the epidural covering is lost, the anaesthetic solution diffusing along the perineural lymphatics. Rudin and others (1951), however, have determined

* Performed at the Klinik für kleine Haustiere, Tierärtzliche Hochschule, Hannover.

† Doctor Medicinae Veterinariae (Hannover).

that the dura mater is permeable to local anaesthetic. They found that epidurally injected novocaine could be found in the liquor in higher concentrations than in the blood, and have suggested that the mechanism of its action may be explained along these lines.

The Effects of Epidural Anaesthesia

The primary effect that follows upon the injection of the anaesthetic fluid into the epidural space is one of analgesia or loss of pain in the posterior parts, progressively moving anteriorly. This is soon followed by a relaxation of the same portion of the body. The first indication of the effect of the anaesthetic that the subject usually gives is that the tail will relax and, if long enough, will hang limply from the root. This is soon followed by a relaxation of the anal sphincter. At this stage it may be evident that no reflex is elicited from stimulation of the plantar surface of the hind feet although the subject may still move them spontaneously. The sensitivity of the parts is lost before the motor power and recovery is in the reverse order. The blocking of the sympathetic innervation of a large proportion of the body, including the splanchnic area and the adrenal gland, is the principal cause of the fall of the blood pressure that ensues on the induction of epidural anaesthesia. This fall of the blood pressure, however, is not considerable even in cases where double the normal concentration of anaesthetic is used (Frey, 1951) and is thought to be of little consequence. It may be largely or completely prevented by the previous injection of a suitable peripheral vasoconstrictor such as nor-adrenaline* although, of course, the regulation of the blood pressure is not restored through this expedient.

Respiration may be depressed under this form of anaesthesia due to the loss of respiratory aid customarily obtained from the abdominal and intercostal muscles. Artificial respiration, however, is not necessary unless the anaesthetic is allowed to pass above the commencement of the cervical vertebrae. In the 80 cases considered here, this was not required. Depression of the sympathetic innervation of the intestine results in an enhanced peristalsis, which may be troublesome during operations on the viscera. The injection of atropine is without effect on this intestinal motility. Extravasation of thin faecal matter from the small intestine through the relaxed anal sphincter may be prevented by the routine insertion of a tampon.

The duration of the anaesthetic action is approximately one hour, which suffices for the completion of most operations. The period of the anaesthesia may be controlled with the strength of the solution used. It is advantageous, however, to use the standard strength of local anaesthetic solution, and to shorten the operation time. This may be achieved by clipping the hair at the operation site, and to carry out most of the other preliminary preparations, such as the basic cleansing of the site, under the morphine sedation alone. If the operation be greatly prolonged due to unexpected complications, a general anaesthetic may be administered without the general-anaesthetic risk being greater due to the primary administration of the epidural anaesthetic. The morphine premedication should be borne in mind, however, when the anaesthetic dose is computed.

Recovery from the anaesthetic, once commenced, is rapid, and all traces are usually lost before the lapse of three hours. There is no post-anaesthetic excitement. In most cases the animals are able to walk to their cages two hours after the commencement of the operation. In two cases out of the 80 under consideration, a slight paresis was seen which lasted for about three days. In no case was any lasting effect of the anaesthetic evident.

* See this journal (1953). **65**. 482.

Dosage

In the majority of cases, the anaesthetic solution used was a 2 per cent. procaine solution, without adrenaline. This gives adequate anaesthesia lasting approximately for one hour. The same effect may be obtained by the injection of a 1 per cent. solution with the addition of adrenaline. As, however, the strength of the adrenaline admixture was found to vary after the bottle had been opened, it is thought to be safer to use the 2 per cent. solution, and so obtain more reliable results. Tutocaine solution gave greater variation in the anaesthetic time, and has no immediate advantages over procaine.

The dosage of the anaesthetic solution used was that recommended by Frey in 1951. This is given in the table below. As, however, overdosage was found to be not readily produced, a simplified system was used in most cases. As a standard dose, that for a dog of a length (occiput to tail root), of 55 to 60 cm. was used, *i.e.*, 1 c.c. of the anaesthetic solution was injected for every 10 cm. length. Smaller dogs were given slightly less, and larger dogs a little more than this dose. It is suggested, however, that until experience is gained, the table below should be followed closely.

Length, occiput to tail root	Groups		
	I	II	III
40 cm.	2·0 c.c. solution		
45 „	3·0 „ „		
50 „	3·5 „ „		
55 „	4·25 „ „		
60 „	5·0 „ „		
65 „	5·5 „ „	1/2	4/5
70 „	6·5 „ „		
75 „	7·0 „ „		
80 „	8·0 „ „		
85 „	8·5 „ „		
90 „	9·25 „ „		
95 „	10·0 „ „		
100 „	10·75 „ „		
		After Frey	

Group I : Laparotomies.
Group II : Operations on tail, peritoneum, urethra, etc.
Group III : Operations on the hind legs.

Clinically, these three groups were not differentiated, and the full dose was given for all operations. The total dose may be *raised* by ½ to 1 c.c. for operations on the epigastrium. Although in the four gastrotomies recorded the anaesthesia was found to be adequate for the purposes of the operations, pain may usually be elicited when traction is exerted on the mesogastrium.

For premedication, morphine was given as a dose of 2 mg. per kg. or approximately 0·014 gr. per lb. b.w. It was administered intramuscularly to ensure adequate absorbtion.

Results

As the results of epidural anaesthesia in the dog were gathered under purely clinical conditions, it is not possible to form an accurate concept as to how they compare with general anaesthesia, neither are protocols of all cases available. Detailed protocols, however, were made of 30 cases, the results of which give a general impression as to the effect of epidural anaesthesia on the mortality rate and the recovery of the patient.

These 30 cases were taken consecutively, *i.e.*, they were not selected. It is not necessary or desirable, having regard to space, to give individual case histories. The results will therefore be grouped as follows. The 30 cases of epidural anaesthesia in the dog entailed : (*a*) Laparotomies, comprising five caesarean sections ; seven hysterectomies—*i.e.*, pyo-

metras ; four gastrotomies ; two intestinal resections ; two cystotomies and one rupture in the region of the umbilicus ; (*b*) nine superficial operations, including the extirpation of tumours, anal glands, reduction and fixation of fractures, etc.

Of these 30 inductions of epidural anaesthesia, 27 were found to be effective. Of the three cases in which the anaesthesia was accompanied with difficulties, one was a hysterectomy where, due to complications, the duration of the operation was more than one hour. After 60 minutes of good anaesthesia the patient began to evince signs of sensitivity and became restless. General intravenous anaesthesia was then given. The second was a case of intestinal resection where a return of perception was evident after 40 minutes. The third case showed only motor paralysis without loss of sensitivity. In the latter two cases, as in the first, general anaesthesia was given by the intravenous route without difficulty or apparent ultimate detriment to the subject.

As far as could be judged, the recovery rate from this form of anaesthesia compared well with that resulting from general anaesthesia. In the series under consideration there were two deaths that could be directly ascribed to the operation. One was a sheep dog which was operated upon on account of whelping difficulties. The case was of three days' standing and was very toxic. The animal died on the table soon after the induction of anaesthesia and during the commencement of the operation for caesarean section. The second case was a terrier with a deep-seated tumour, the removal of which entailed a great loss of blood. Complete haemostasis was not achieved and the wound was packed. The animal died two and a half hours after the induction of anaesthesia.

The ultimate results of these operations are here only of interest in relation to the possible locomotor effects of the anaesthesia. Of these 30 cases no animal failed to recover in the usual time, *i.e.*, one to three hours.

In this series no case of delayed recovery as reported in the large series (*vide supra*) was observed, neither were any symptoms that might be associated with the effect of epidural anaesthesia subsequently brought to notice.

Discussion

Epidural anaesthesia in the dog appears to have several advantages over general anaesthesia in the following cases. In debilitated cases where general anaesthesia would be accompanied by a great anaesthetic risk. This immediately brings to mind cases of tumours in aged dogs, or the extirpation of anal glands in the older male dog when conservative therapy is found to be of no avail. The castration of old dogs which has to be undertaken for various reasons may well also fall under this heading.

Similar to the cases cited above are those in which the debilitation is due to the disease process itself, and has advanced to such a degree that the amount of anaesthesia that would be required to obtain adequate relaxation when a general anaesthetic be used, would entail the danger of collapse. This may be the case where a female dog is suffering from the condition of pyometra, especially if the operation has been delayed. Foreign bodies causing complete obstruction of the lumen of the intestine are another source of dogs which come to the surgery in an exhausted and dehydrated condition, and which are usually classed as the " poor anaesthetic risk." Many of these cases are not in a fit state to stand the preliminary morphine injection, and are found to recover better when the epidural anaesthetic is given without premedication.

Caesarean section is perhaps the condition that most demands an operative procedure that is not associated with high concentrations of anaesthetic agents in the blood stream. This lack of a general anaesthetic agent in the blood ensures that the whelps are delivered in an optimum state of viability. Also, and equally important in those cases where living young are required, is the fact that the bitch, depending on her mentality and instinct, is ready to mother the whelps as soon as the operation is completed. An example where this was seen to its best effect was the Dachshund bitch which was delivered by caesarean section. When the operation wound had been closed, the animal was placed in a box together with her newly delivered whelps. Still under the effects of the epidural anaesthesia and therefore feeling no discomfort, the bitch showed great interest in the young, licking them thoroughly and allowing them to suckle.

Further indications for the performance of operations under epidural rather than general anaesthesia are found among those animals which, due to the anatomical arrangement of the air passages, are unfavourable subjects for general anaesthesia. These animals, such as the Bulldog, the Boxer and the Peke, can usually be anaesthetised without danger only if an endotracheal tube is inserted immediately on induction. This, however, is not always an easy procedure due to the fleshiness of the fauces and the soft palate. Here also may be mentioned the value of epidural anaesthesia in those cases where good relaxation of the abdominal wall is required or is desirable in cases where it is not expedient to place the patient under very deep general anaesthesia or to effect relaxation through the use of a substance such as myanesin (Berger & Bradley, 1947).

Good muscular relaxation may also be achieved through the use of epidural anaesthesia in those cases where manipulation of the hinder extremities is desired. Examples of this type of operation may be chosen from the internal fixation of the femoral bone and the reduction of luxated joints in the hind limbs. The muscular relaxation following the induction of epidural anaesthesia enormously facilitates diagnostic palpation of the abdominal contents. In difficult subjects such as heavily muscled dogs it may enable a diagnosis to be made which would otherwise have been obtained only after a general anaesthetic or X-ray photography.

The effect of age in relation to epidural anaesthesia is a smaller factor than in relation to general anaesthesia. The age of the subject is only of concern in so far as in the very young dog difficulty is sometimes experienced with the insertion of the needle. In these cases the needle may become lodged in the still soft part of the base of the spinal canal or the intervertebral disc. In such cases the expression of the fluid from the syringe will be resisted. In the very old dog, difficulty may be experienced in finding the space between the last lumbar and sacral vertebrae owing to its partial closure due to adventitious bone formation.

Contraindications

Contraindications to epidural anaesthesia are as follows :—

(*a*) Infected lesions in the region of the lumbar and sacral vertebrae.

(*b*) Congenital or acquired malformations of the lumbosacral region.

(*c*) Conditions of weakness or of ataxia of the posterior parts of nervous origin.

(*d*) Hypotension and shock.

Summary

The value of epidural anaesthesia in the dog is discussed. Practical aspects of the injection technique are described. A summary is given of the results of 30 consecutive cases.

(*Continued at foot of column* 1, *page* 120).

A MODERN MEAT PLANT IN EAST AFRICA

BY

A. GINSBERG,

Department of Veterinary Services, Kenya

Nineteen miles south-east of Nairobi on a wide plain, 4,900 feet above sea level, a new industrial undertaking has sprung up in the African bush. It is the new meat production plant, with its staff houses surrounded by lovely gardens, swimming pool, and attractive club. It could be a suburb of London were it not for the surrounding dry, yellow bush, the dust of the main Nairobi-Mombasa road, and the intense radiation and glare of the overhead sun.

The factory is the property of the Kenya Meat Commission. The staff is composed of British specialists, Asian clerks and tradesmen, and African labour. The plant, a multifloor packing design, was built and equipped by British firms. Its main block is a three-storey building composed of a killing and dressing floor on top, a sorting and by-product department on the first floor, and a disposal department for the utilisation of edible and inedible by-products on the ground floor. The killing and dressing hall serves for cattle as well as sheep and poultry, but goats are slaughtered and dressed in a separate building adjacent to the isolation block. Walled off from the ground floor is the cattle stunning and bleeding pen, connected with the top floor by an incline conveyer. The cold store and canning departments are both three-storey buildings, and lie in one row opposite the main block, divided from the latter, at ground floor level, by a railway siding, a direct connection from the East African Railways main trunk line. They are, however, connected by a covered-in bridge with the first and second storeys, *i.e.*, the by-product department and killing floor. Other units of the plant having a separate range of buildings include a spacious hide curing department, hide drying sheds, lairages, isolation block, workshops, garages, lavatories, changing and bathing rooms, laundry plant, chemical laboratory, administration offices, etc.

Method of Procedure

The livestock arrives almost entirely by rail, in some instances from up-country farms or ranches 400 or more miles away. After unloading, the animals are assembled in a wide, fenced yard, situated between the unloading ramp and the lairages. The latter lie in one long row, shaded by extensive roofing. They are pleasantly cool, the dividing walls being only about 6 feet in height and made of thin but strong sisal poles which admit the welcome breeze from the Athi plains. The lairages are divided into several individual compounds each of which is large enough to hold at least 60 head of cattle. Every compound has a cement trough and ample overhead hay racks. The one nearest the exit is reserved for the veterinary department as a "suspect lairage" where all diseased or disease-suspected animals are segregated. Here the "suspects" receive individual attention, and the subsequent diagnosis decides whether the animal should go to the killing floor or to the isolation block. All casualties are transported from the railway ramp or lairages by a special motor-driven load lifter. The isolation block is a spacious and well-ventilated building with a flat roof serving both as emergency slaughterhouse and *post-mortem* room. Here the carcase is lifted by a hoist through an opening in the roof and directly transferred into a large, upright digester, reserved for the use of this department only. Thus in the case of anthrax, for instance, the unopened carcase, together with the hide, reaches safety without endangering the neighbourhood.

Veterinary inspection of heads.

The healthy stock arrives at the stunning and bleeding pens by way of two fenced-in passages. The larger one serves for cattle and leads through a washing bath and cold shower which not only cleans the hides but improves the bleeding and consequently the keeping quality of the meat. The cattle channel breaks up into two outlets a few yards beyond the bath, one leading to a single throw stunning pen and the other to a casting slaughter pen, both at ground level. The smaller passage from the lairages has been constructed for sheep and goats, and leads towards an elevator which takes the animals to a waiting and killing pen on the top floor.

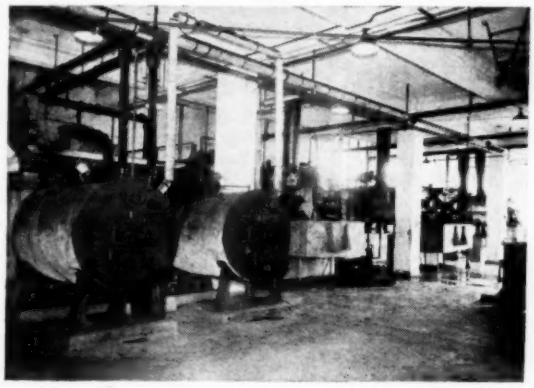
The stunned and bled cattle carcase is lifted by a power-driven winch on to an incline conveyer which takes it up to the dressing floor. This transfer from ground level to the top of the building requires about eight minutes, a sufficient interval to allow for thorough drainage of the carcase before reaching the dressing bed. The blood from slaughtered cattle as well as that from the small-animal bleeding pen situated on the top floor of the main building is drained into a blow tank, coagulated with steam, and passed through a press for eliminating about 40 per cent. of moisture. It is then transferred to two IWEL rapid blood dryers, and finally ground and packed. When the cattle carcase has reached the top floor the first dressing operation is the removal of the horns by a power-operated saw. These are sent by chute to the floor below. The carcase then moves on to one of the six dressing beds which are arranged in one row and so placed that complete super-

References

Benesch. (1932). *Munch tierärztl Wschr.* **83.** 85.
——— & Kostner. (1942). "Die geburtshilflich-gynäkologischen Laporotomien bei Fleishfressern." Berlin u Wien.
Berger, F. M., & Bradley, W. (1947). *Lancet.* **1.** 97.
Brook, G. B. (1936). "Experimental and Clinical Studies of the Spine of the Dog." London: Baillière, Tindall & Cox.
Corning, J. (1885). *N.Y. Med. J.* 483. Cited by Evans, F. T. (1949). "Modern Practice in Anaesthesia." London.
Frey, H. H. (1951). Diss, Hannover.
Goodman, L., & Gilman, A. (1941). "The Pharmacological Basis of Therapeutics." New York.
Rudin, D. O., Fremont-Smith, K., & Beecher, H. K. (1951). *J. Appl. Physiol.* **3.** 388.
Siekmann, F. W. (1952). Diss, Hannover.
Walsby, J. B. (1952). *Vet. Rec.* **64.** 651.
Wright, J. G. (1947). "Veterinary Anaesthesia." 2nd edition. London.

vision and inspection can be carried out almost from every part of the hall. The carcase, complete with head, is lowered to the dressing bed by an IWEL gravity dropper.

The flaying is done by Kingley flaymasters which carry out the work as no knife would do, besides making the operation much quicker and easier. After the carcase has been raised to the dressing rail by a power-operated dressing hoist and the hide dropped, the former is transferred to an IWEL overhead side finger conveyer on which all dressing operations are carried out by the line system. The hides are removed immediately from the dressing floor and sent down by an appropriate chute to the floor below for subsequent treatment. At suitable intervals along the overhead side finger dressing conveyer are all the operators as well as six meat inspection stations. The first five posts are served by trained African inspectors. The examination begins alongside the evisceration and head table where the abdominal viscera, plucks, heads and tails are dropped by the operators. To facilitate the movement of carcases, avoid congestion, lifting and unnecessary handling, appropriate chutes are provided for all meat inspection posts allowing smooth and speedy removal to the floor below of passed or condemned offals, heads, tails,



Ground floor with blood dryers and dry-rendering digesters.

etc. The position of all chutes is such that the examiner can remain standing on one spot while carrying out his duties.

When the evisceration has been completed the carcase passes on to the splitting position where the sides are sawn by two power-operated saws, the operators here standing on sloping platforms to suit the height of the work. It is now, after the carcase is split, that each side receives individual attention at the fourth and fifth meat inspection posts. First the fore-quarters are examined from a ground level position. The routine procedure adopted for the detection of the commonly encountered *Cysticercus bovis* is a copy of the reliable South African method, according to which three deep incisions are made across the muscles proximal to the elbow joint. The hind-quarters are examined from a raised inspection platform. Every post has facilities for the sterilisation of soiled inspection knives.

The sides now move on to the sixth and last meat inspection post, which is situated before the washing positions. This station is manned by a European sanitary inspector whose duties are to collect and assess the reports received from the five preceding posts and to carry out a final inspection. He decides whether the carcase should pass as fit for human consumption, be retained for further inspection, or be condemned provided there is sufficient justification for this decision. If a case is doubtful or requires a more detailed examination the sanitary inspector affixes the label " Retained for further inspection " and the side is then diverted to a detention room situated on the same floor. It is here that the veterinary officer in charge carries out a detailed inspection, and if necessary removes parts to his laboratory, a separate building within the factory compound. All retained sides are kept in cold storage until the laboratory result is known. Should more extensive bacteriological or pathological examination be required the Medical Research Laboratory in Nairobi, or Veterinary Research Laboratory, Kabete, is approached.

To complete the dressing operations after the carcase has been fully examined, trimming, washing, grading, and finally weighing positions are provided. In conclusion all edible sides are marked both with a Government inspection as well as roller grading stamp, and transferred to an overhead rail which leads into the cold store. The maximum lay-out capacity is 400 head of cattle per day.

Smaller Animals

Sheep, goats and smaller calves are, as already mentioned, brought up by lift to the top floor and slaughtered there over a built-in cradle. The carcase is then lifted by a spiral elevator on to a bleeding rail where the first dressing operations commence. Once the hind legs have been partly flayed the carcase is transferred to an IWEL power-driven conveyer and dressed on the " ring " principle wherein each operator has his own particular task to perform—a method which has the combined advantage of speed and efficiency. Along this fully mechanised line are placed all dressing stations as well as two meat inspection posts. The meat inspection station at the evisceration table is served by two African inspectors and deals with the examination of the abdominal viscera and plucks which are then dropped by appropriate chutes to the floor below for separation and sorting. The heads are hung on a special hook beside the carcase. This enables the examination of the brains should heartwater be suspected. The carcase is again finally examined by a European sanitary inspector and the routine procedure adopted here is similar to that described for cattle. The maximum lay-out capacity is 2,000 sheep per day.

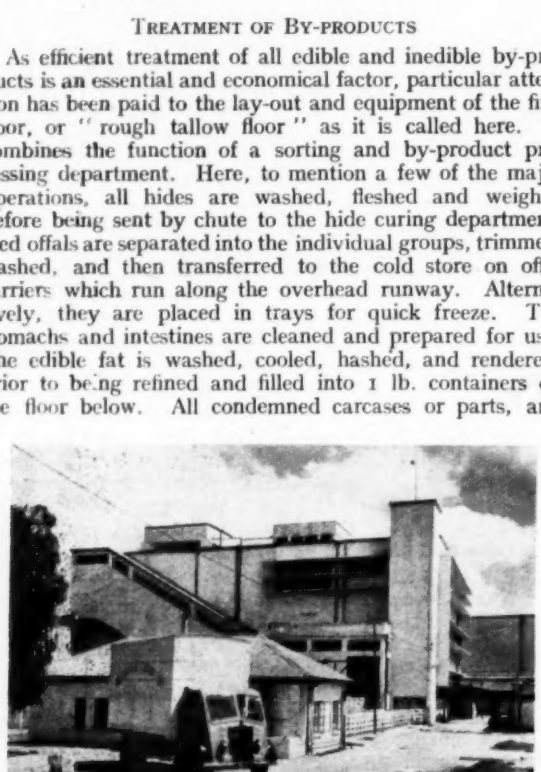
Separated by partitions from the large- and small-animal killing and dressing floor is the poultry department. The birds are carried to the top floor by lift in cages. The slaughtering and dressing line is only partly mechanised. The birds are hung by a shackle and bled. As soon as the

Killing and dressing floor with central portion of side finger dressing conveyer.

struggling and bleeding is over the fowl is scalded and then picked by a power-driven Cope " quikpik drum plucker." The remaining dressing operations are done by hand. *Ante-* and *post-mortem* inspections are carried out, the latter taking place at the evisceration table. Birds which are passed as fit for human consumption are weighed, graded, stamped, and then transferred either to the cold store or quick freezing tunnel.

Treatment of By-products

As efficient treatment of all edible and inedible by-products is an essential and economical factor, particular attention has been paid to the lay-out and equipment of the first floor, or " rough tallow floor " as it is called here. It combines the function of a sorting and by-product processing department. Here, to mention a few of the major operations, all hides are washed, fleshed and weighed before being sent by chute to the hide curing department, Red offals are separated into the individual groups, trimmed, washed, and then transferred to the cold store on offal carriers which run along the overhead runway. Alternatively, they are placed in trays for quick freeze. The stomachs and intestines are cleaned and prepared for use. The edible fat is washed, cooled, hashed, and rendered, prior to being refined and filled into 1 lb. containers on the floor below. All condemned carcases or parts, and



Main factory building with chemical laboratory in the foreground and small-animal passage leading towards the elevator tower.

inedible by-products are put into the six IWEL dry-rendering digesters of which the charging hoppers open up on the first floor. There is no waste. Effective use is made of every part of the carcase including even the stomach contents, which are dried and used as compost.

The cold store is, as already mentioned, a three-storey building. Each floor is divided into seven departments. The top storey serves as chill room (38° F.), the first floor as freezer (15° F.), and the ground floor as a stacking place for quarters of beef, and sheep and goat carcases. The ground floor has five outlets to the railway siding, where insulated vans are loaded to supply the needs of up-country districts as well as the export market. A special outlet leads to a roofed-in loading platform from which insulated motor lorries take meat mainly for the Nairobi market. The cold store can hold 3,000 hanging sides and 900 tons of stacked-up meat.

The canning plant has still to be equipped, but when completed will be able to tackle 200 sides of beef during an eight-hour period. In addition to canned goods beef extract will be produced.

The Department of Veterinary Services is responsible for the inspection of meat, whilst the supervision of the general hygiene is the duty of the Medical Department. The officer in charge is an M.R.C.V.S., a specialist in meat hygiene. He is assisted by three European sanitary inspectors, holders of the R.S.I. certificate and 12 African meat inspectors who, prior to their engagement, received an eight-month course concluded by a practical, written, and oral test. The routine meat inspection has been modelled on the U.S.A., German, and South African methods. The inspector on the killing floor is fully supported by thorough livestock inspection and a laboratory service on the spot. The judgment of meat is based at present on Memo 3/Meats but legislation suitable for this Colony has been prepared and is to be passed in the near future.

Worthy of mention is the close collaboration in this branch of public health with the Medical Department. It is almost as asked for during a recent meeting of the WHO in Vienna. This alone can raise the standard of meat hygiene and prevent zoonoses.

Acknowledgment.—This paper is published with the permission of the Director of Veterinary Services, Kenya.

ARTIFICIAL INSEMINATION AND ANIMAL BREEDING PROBLEMS

The British Council, with the co-operation of the University of Bristol Veterinary Department, has planned a course of lectures which will be held at the Laboratories of the Department, Langford House, Langford, near Bristol, from July 11th to 24th, 1954, and readers are asked to note the change from the dates originally advertised.

The purpose of the course is to give a general survey of artificial insemination and of certain problems concerning livestock breeding. By means of lectures, discussions, demonstrations and visits, members will be offered a knowledge of the latest British practice in livestock breeding, and of the scientific, economic and administrative considerations associated with this practice.

The syllabus has been planned by Professor F. Blakemore, D.V.SC., M.R.C.V.S., Professor of Veterinary Medicine at the University of Bristol. It includes a general consideration of breeding policies and of the economics and organisation of an Artificial Insemination Service. There will be lectures on breeding policies in cattle, poultry, pigs and sheep, on certain factors in the physiology of reproduction which affect breeding, and on causes and treatment of infertility. Members participating in the course will be shown the latest techniques of artificial insemination and of semen preservation, and will themselves have the opportunity of obtaining practical experience.

The inaugural lecture will be given by Dr. G. Hammond, F.R.S., Reader in Veterinary Medicine at the University of Cambridge. Other lectures during the course will be given by Professor Blakemore and by members of his staff and of the staff of the North Somerset Cattle Breeding Centre. There will also be lectures by scientists from the Milk Marketing Board and from the Animal Health Division of the Ministry of Agriculture, as well as by farmers specialising in livestock breeding.

As part of the course, visits will be made to the Dartington Hall Artificial Insemination Centre and to local farms in Somerset and Devon. An artificial insemination centre, responsible for more than 77,000 first inseminations a year, is situated very near by. As the Veterinary School of the University of Bristol is one of the two new schools of this kind in Britain, there will be an opportunity to study the planning of a modern veterinary school. This part of Britain has long been famous for its cattle, and Langford House itself is a pleasant country mansion situated in a village, about 12 miles from Bristol, amid a surrounding countryside of great scenic beauty.

The course is open to practising veterinary surgeons, or to administrators and others concerned professionally with livestock breeding, who have a qualification in agriculture. There are 15 vacancies and the fee for the course is £33. Accommodation (single rooms) has been reserved at the Hostel which forms part of the Department at Langford.

THE VETERINARY RECORD

February 20th, 1954

THE PROTECTION OF ANIMALS (ANAESTHETICS) BILL, 1954

THE preparation and the presentation of a Bill to repeal the Animals Anaesthetics Act of 1919 is the result of long and persistent efforts by a number of veterinary surgeons to free their profession from a most irksome and confusing Act of Parliament.

The Animals Anaesthetics Act has long been obsolete; it does not achieve the object its sponsors had in mind. It may at one time have benefited the animals it was intended to protect, but it now fails on two major issues. The first is that it is not comprehensive—it does not cover all the domestic animals, nor does it provide for all the surgical procedures that can be performed on those it is designed to protect. In the second place, while the Schedules in general may have been acceptable at the time the Act was passed, they do not permit a veterinary surgeon to use his discretion in selecting the method of anaesthesia best suited to the circumstances of any particular case. Provision was made that the Schedules could be amended from time to time, but experience has shown that this is not an easy matter.

It has become obvious that the Schedules, listed in 1919, are inadequate. Further, with ever-improving methods of technique and an increasing range of anaesthetics, it is manifest that any new Schedule would be obsolete before it became law. Amendment of the original Act would not suffice.

To-day, strict application of the Animal Anaesthetics Act may cause increased suffering and even loss of life. In many instances a general anaesthetic is contra-indicated and may precipitate a fatal issue. Yet a general anaesthetic is scheduled by the Act. Spinal nerve block will give as high a degree of anaesthesia and as complete a muscular relaxation as any known combination of anaesthetics and drugs; it is an ideal method of anaesthesia for reducing a dislocated hip or hock joint in the dog. It is equally efficient for reducing a fracture, or for an amputation. A regional nerve block will de-sensitise a horse's foot completely; yet, according to the original Act, if the *wall* of the hoof is to be stripped or the lateral cartilages operated upon, an offence is committed if a general anaesthetic is not given.

The anaesthetist has many things to consider before selecting an anaesthetic for a patient. The choice is not always the same for two creatures of the same species even when they are suffering from the same complaint. How then can such a problem be dealt with by fixed rule or regulation? The Protection of Animals Act of 1911 states that if a person shall "by wantonly or unreasonably doing any act or causing or procuring the commission or omission of any act, cause unnecessary suffering, he shall be guilty of offence." The Bill to repeal the Animals Anaesthetics Act makes it clear that the veterinary surgeon will offend against this Act if he operates upon "any kind of animal without an anaesthetic so administered as to prevent the animal feeling pain throughout the operation." This 1911 Act gives ample protection, therefore, without any detailed Schedules.

The Profession are greatly indebted to Lord Stamp and to Lady Davidson for the wholehearted support they have given to this important and necessary cause.

CLINICAL COMMUNICATION

TWO CASES FOR DIAGNOSIS IN CATTLE (SUSPECTED MUSCULAR DYSTROPHY)

N. S. BARRON

Reading

Case I

It was reported that in a herd of pedigree Jersey cattle several heifers carrying their first calf and one cow (see photo) developed a peculiar weakness of the pectoral muscles associated with the dropping of the thorax causing an exaggeration of the contours of the withers.

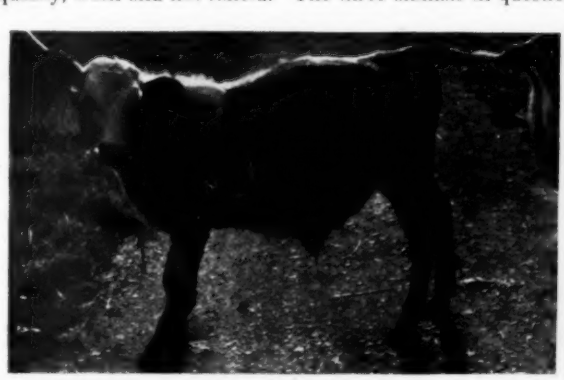
A clinical examination of the affected animals showed that the shoulder blades were protruding 4 to 6 inches above the level of the line of the withers, the thorax appeared to have fallen and there was deep cavitation into which the hand could be placed between the anterior edge of the scapula and the chest wall. The abnormality was bilateral and there was no pain on manipulation of any part.

History.—Out of 16 heifers served by the same bull, three developed this anatomical defect when three to six months in calf. The animals were kept on the open Downs, where there were numerous steep declivities. It was noteworthy that the bull also showed the same symptoms as the heifers though he had been kept in a box for several years, and the heifers were purchased from different sources and were not related to him.

Discussion

In the first instance it was suspected that the malformation had resulted through muscular strain caused by frequent descents over the somewhat rugged pastures. It has been reported that muscular damage may occur under these circumstances, but is usually one-sided. As in this instance the abnormalities were clearly bilateral, this view was discarded. The possibility that the condition was of the nature of a muscular dystrophy seemed to justify serious consideration especially in view of Blaxter's work with calves. In discussing his experiments he refers to "winged scapulas" and outwardly rotating hocks, etc.

Bearing in mind the prevalent view that fatty acid produced by the breakdown of fats is thought to initiate muscular dystrophy by interference with vitamin E metabolism, enquiry was made regarding the feeding of cod-liver oil, but no such supplement appears to have been fed during the previous 12 months. Moreover, only a few pounds of straight concentrates were given towards the end of pregnancy and so far as it was possible to ascertain these were of good quality, fresh and not rancid. The three animals in question



subsequently calved normally and their physical appearance has somewhat improved. The bull was slaughtered, but unfortunately no *post-mortem* examination was made.

A somewhat similar condition to the above was also observed in two bulls which were being prepared for show and receiving large quantities of cod-liver oil. Whilst it is suspected that the above case may be one of muscular dystrophy, the evidence as presented is inconclusive, as no opportunity was provided to establish a diagnosis histologically.

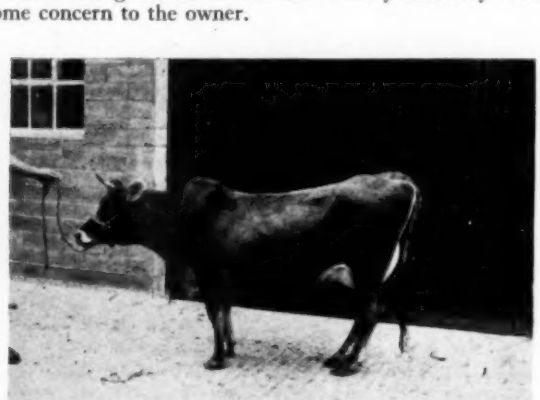
Case II

Hump-backed Calves

An investigation was made into the cause of a roach-backed condition in 31 Hereford × Shorthorn calves. All these animals were the progeny of one bull whose previous crops of calves from the same group of cows did not show any abnormality. Every one of this particular bunch of 31 animals developed the peculiarity which was first observed when the animals were eight to nine weeks of age, and both sexes were affected.

Clinical Picture.—As indicated in the photograph, there was a marked arching of the spinal column in the dorso-lumbar region and there was a marked tendency to be pot-bellied. The animals did not seem to display any sign of discomfort, galloping about and moving in all directions without inconvenience. When pressure was brought to bear with the hands the vertebral column could be readily returned to the normal ; in fact many animals voluntarily reduced the curvature to normal when the hands were merely laid on the back.

The striking nature of the abnormality naturally caused some concern to the owner.



Details of Management.—The calves were kept on their dams for four days, were bucket fed with new milk to the 10th day, and received dried milk and the new milk 50 : 50 subsequently to the 13th day together with a little hay. From the 14th to the 80th day they received dried milk,* calf mixture† and hay, and had free access to soft water. Dehorning took place at about the 40th day. The owner considered that the calves did not in fact receive their full rations and were on an unusually low plane of nutrition up to about three months. The hay was on the coarse side and the calves, which were run in several bunches in covered yards, could eat their bedding, circumstances which, taken together, might well explain their strikingly pot-bellied appearance.

At three months dry grass was introduced and the quality of the hay improved. Subsequently all the calves recovered rapidly. It may be of some significance to note that a group of pedigree Shorthorns were reared on the same farm by the same man under precisely similar conditions but did not develop the abnormality, the only difference being that this group received new milk up to eight weeks of age.

Investigation.—During the initial stages of the investigation blood samples were examined in the hope of identifying some abnormality which would assist in establishing a diagnosis. Results of analyses are given below :—

	1	10	21	22	32	35
Calcium mg. per cent. serum	11·1	11·0	11·1	10·8	10·2	10·3
Magnesium " "	2·0	2·2	2·2	1·6	1·8	2·0
Acetone " "	Normal					
Inorganic P. " blood	Clotted	6·2	6·6	Clotted	5·4	5·2

Identification	*Copper mg. per 100 ml.*
HC 1	0·08
HC 10	0·09
HC 21	0·09
HC 22	Clotted
HC 32	0·09
HC 35	0·09

All the above figures are within the normal range.

Discussion

Initially a tentative diagnosis of rickets was made and blood samples were sent for examination for this purpose, but phosphorus levels indicated that this was not the case. A copper estimation was made at the same time, rather to secure general evidence of copper levels in calves on this farm than because of any suspicion that this might be associated with the disease.

Shortly after the initial observations had been made and the case was still under consideration, a suggestion was made that the symptoms might be due to a form of muscular dystrophy. In the view of the author this seemed to be a possibility, and to be supported by the observations made by Blaxter, previously referred to, who noted a similar condition in calves receiving high levels of cod-liver oil and showing additional signs of muscular dystrophy. As noted in Case I, however, Blaxter observed a variety of symptoms in his calves, rumenal distension being only one of them.

The suggestion that the arching of the back was the result of discomfort due to an over-distension of the rumen with roughage was also considered, but finally discarded in favour of the theory that this abnormality was more specific in origin. As these cases occurred somewhat before the picture of muscular dystrophy was becoming clear, even the tentative diagnosis was delayed and in consequence the opportunity to establish this with greater certainty by therapeutic means was unfortunately lost.

These two cases are recorded as such may well occur under modern systems of management, and in the hope that other observers may be able to add further evidence which may lead to a more firm diagnosis.

* F.M.S. Dried Milk

Oil	1·25 per cent.
Albs	23·0 "
Fibre	0·75 "

† Calf Mixture

Flaked maize ...	22·5 per cent.
Oats	22·5 "
Bran	22·5 "
High protein cake...	22·5 "
Pure white fish meal	10·0 "

Erratum.—*Vet. Rec.* **66.** No. 5, p.73. In Table II, Group A, the figure for 24 weeks' growth weight should read "5 lb. 0·8 oz." and *not* "5 lb. 10·8 oz." as originally stated.

ABSTRACTS

Ophthaine as a Local Anaesthetic in Ophthalmology*

Ophthaine is a sterile aqueous solution containing 0·5 per cent. of 2-diethylaminoethyl 3-amino-4-propoxybenzoate hydrochloride. It has been used as a surface anaesthetic in more than 1,000 eyes in dogs and cats, and it is non-irritative to mucous membrane and is free from undesirable side effects.

The average time for the onset of anaesthesia averages six minutes—induced by the instillation of one to two drops at three- to five-minute intervals, twice only. The average duration of anaesthesia is from 48 to 95 minutes.

It has been used for examination of the anterior part of the eye, removal of foreign bodies, cauterisation of ulcers and for the relief of photophobia and pain generally. In the latter a drop instilled every five minutes with three to five applications resulted in complete anaesthesia lasting over two hours.

C. F.

* **Investigational Use of Ophthaine as a Local Anaesthetic in Ophthalmology.** Magrane, W. G. (1953). *N. Amer. Vet.* **34**. 569.

* * * * *

Anavenol K—Its Use as a General Anaesthetic in Sheep*

In a search for an anaesthetic for use in sheep practice in the Peruvian mountains Anavenol K was tried and found most satisfactory. No preliminary preparation is necessary though the avoidance of bulky food is probably an advantage. Record syringes of 30 to 50 c.c. capacity are used and the drug is injected intravenously. There is no danger should any go into the perivascular tissues. The recommended dose for induction is 10 c.c. per 50 kg. though the author appears to have used bigger doses and states that the rate of injection, *viz.*, 1 c.c. per second, is much more important than the exact dose. This gives anaesthesia for about 10 minutes which the author claims should be ample for most purposes. It may be maintained by further injections of half doses as and when required. Anaesthesia is of the ascending type. It is non-toxic to the foetus and is therefore suitable for pregnant animals.

One fatal result is recorded in a calf subsequently found to have cardiac hypertrophy attributed to the high altitude.

J. A. L.

* **Anavenol K—Its Use as a General Anaesthetic in Sheep.** Watson, D. F. (1953). *N. Amer. Vet.* **34**. 334.

* * * * *

Harmful Action on the Circulation of Narcotics and Anaesthetics*

This and the next article describe parts of a research project undertaken at the Veterinary College of Hanover, into the pharmacology of the "vegetative centres." The two summaries of results of different aspects of this work are not easy to understand in the amount of detail presented, so the following abstracts cannot help being somewhat cryptic.

The arterial blood pressure cannot serve *per se* as a good indicator of the extent to which narcotics endanger the heart. To obtain more satisfactory evidence an experimental method involving the clamping of the carotid artery of cats or dogs was used: according to it the following conclusions were arrived at.

* **Harmful Action on the Circulation of Narcotics and Anaesthetics.** Krause, D. (1953). *Proc. Pt. 1. Int. Vet. Congr., Stockholm.* **2**. 1008–1012.

Chloral hydrate in moderate doses does not endanger the heart, but if the animal becomes excited under a low dose, there is a risk of cardiac fibrillation and death, especially if adrenalin is given. Intravenous procaine is useful to prevent this.

The quick-acting barbiturates Evipan and Eunarcon do not endanger the heart unless injected too rapidly, when they can cause surgical shock. It is better to inject these drugs fairly slowly after a preliminary dose of Polamidon.

Another barbiturate, Pernocton, is, however, dangerous to the heart, as it rapidly upsets the vasomotor reflexes.

Ether and chloroform both impair the blood pressure reserve.

In a study of antidotes for severe depression of the circulation caused by anaesthetic or by powerful analgetic agents, Cardiazol proved to be the best and more reliable than coramine, caffein or picrotoxin.

J. T. E.

REPORT

[New South Wales: Department of Agriculture Livestock Health Report No. 26 (1950).]

The report is by W. L. Hindmarsh, Chief of the Division of Animal Industry, and covers the incidence of disease in stock, and research work accomplished during the year ended June 30th, 1950.

No epidemic disease caused serious mortality. Heavy rains led to rapid and lush growth of pasture, and these conditions contributed to the abnormal loss reported from internal parasitism, blowfly infestation and mycotic dermatitis.

All sheep-raising districts recorded a heavy incidence of fly strike, particularly body strike, which was due in no small measure to a marked increase in fleece rot and mycotic dermatitis. All these conditions are of particular importance in a State where wool production is paramount in the economic set-up.

As in previous years, the control of tuberculosis has been continued, about half the total testing being carried out by Departmental Officers, and the remainder by practising veterinarians.

Under the four schemes listed 46,985 cattle were tested with 710 reactors. As pointed out in the report these figures do not give a true indication of the degree of infection in New South Wales, because the cattle tested are mostly from selected herds, and from some herds tested in previous years.

Strain 19 vaccine was used in the control of brucellosis, and 40,315 calves were vaccinated.

Ten outbreaks of anthrax were dealt with during the year. Preventive inoculation was carried out on 79,668 sheep and 917 cattle.

An important activity under the Stock Diseases Act is the control of cattle tick infestation in the tick quarantine area, which is carried out by the Board of Tick Control.

Anaplasmosis was recorded for the first time in New South Wales. Four outbreaks of tick fever occurred, one due to anaplasm infection and the other three to babesiella. It is claimed the efficacy of the control programme contributes to the fact that so little tick fever occurs in New South Wales.

An increase in tick infestation was recorded, possibly due to increased efficiency in inspections. In all, 3,107,235 cattle were inspected and cattle dippings numbered 2,880,260.

A new nutrition laboratory was completed and opened at Glenfield, the main veterinary research station. This augments the potential of the station as a scientific institution and provides added facilities for research in nutrition. Diagnosis is one function of the station and 16,410 specimens were examined.

Repeated trials were made with a fog applicator to examine its efficiency in ridding sheep of *Damalinia ovis*. An atomised aerosol was used in which is incorporated DDT and BHC. The fog did not penetrate the fleece of full- or half-wooled sheep. The principle was effective when sheep were treated "straight off the shears."

At Barooga Field Station investigations into toxaemic jaundice have been carried out. The complex can be accurately identified as heliotrope poisoning and chronic copper poisoning.

The wool laboratory at Trangie was completed during the year. The advantages of having facilities to undertake wool measurements and yields, etc., including research on the fibre, in close proximity to the flocks, are very great and will eliminate the lag period between the assembling of the animal data and the fibre data.

At the poultry experiment farm, Seven Hills, work was restricted to genetic studies. This has involved progeny testing of families within the strains of Seven Hills, Australorp and White Leghorns, and American strains of White Leghorn.

C. V. D.

IN PARLIAMENT

PROTECTION OF ANIMALS (ANAESTHETICS) BILL
SECOND READING

The Protection of Animals (Anaesthetics) Bill was read for a second time in the House of Commons on Friday, February 12th. In the course of her speech moving the Second Reading the Viscountess Davidson said:—

The main object of the Bill is to bring properly up to date the law relating to the use of anaesthetics in animal operations. There has been no legislation on this somewhat technical subject since the Animals (Anaesthetics) Act, 1919. That was the first Act to make anaesthetics compulsory for certain operations on animals. During the last 35 years, however, there have been many important advances in the field of anaesthesia and in the range and development of anaesthetic agents now suitable for application to animals. Again, there have been many developments in regard to new operations on animals, and the invention of new techniques for applying anaesthesia in such cases. In those circumstances, the veterinary profession has for some time been unhappy about the present inadequacy of the 1919 Act, which it considers to be far too rigid and limited in its scope.

The Schedule to that Act has, to a very considerable extent, become out of date, and I understand that some of the operations for which general anaesthesia is compulsory under the Schedule could be far more humanely performed with the use of a modern type of local anaesthesia. For instance, the removal of an ovary in a bovine must be carried out under general anaesthesia, but I am assured that in modern conditions such operations are far more efficiently performed with the animal standing, under a spinal anaesthetic.

The operation of stripping the sole or wall from the claw or hoof may be performed, without any anaesthetic, on any animal except the horse, where a general anaesthetic is scheduled despite the fact that the local anaesthetic known as nerve block anaesthesia is more easily, more frequently and more efficiently used on the horse than on any other animal. The 1919 Act makes anaesthesia compulsory for operations on extensive tumours in a horse, but not in the case of dogs, the species in which such operations are most often performed.

Rare operations such as a quitter in the horse, and enucleation of the eyeball are included in the 1919 Act, whereas many more common major operations are not included, even though in some cases they require very complicated anaesthesia. Such operations include the reducing of fractures and dislocations, the opening of joints, the pinning and screwing of bones, amputations, operations on chest, lungs, heart, brain, etc. Dental operations on horses are included in the 1919 Act, but there is no reference to tooth extraction for dogs, in which dental disease is most common.

Under this Bill the use of anaesthetics will be compulsory for all, except minor, operations upon all animals, but not upon birds, fish or reptiles. The latter group have been excluded because, up to the present time, no completely satisfactory methods of anaesthetising all types of birds, fish or reptiles have been discovered. The placing of this Bill on the Statute Book, therefore, would be a considerable advance towards ensuring humane conditions in animal operations. It would also give the veterinary profession a better opportunity of taking advantage of all up-to-date scientific developments in the application of anaesthesia.

The original draft of this Bill was introduced in another place at a late stage last Session, and obtained an unopposed Second Reading there on October 27th, but it could not make any further progress before the Session ended a few days later. That Bill was prepared by the British Veterinary Association, which is the equivalent, in the veterinary field, of the British Medical Association. Not only had it the support of the veterinary profession, including that of the Scottish Branch of the British Veterinary Association, and the Royal College of Veterinary Surgeons, but also the support, in principle, of the main agricultural interests concerned, that is to say, the National Farmers' Union, and the National Cattle Breeders' Association, and also the British Horse Society and the Kennel Club.

When the Bill came up for Second Reading in another place, on October 27th, it was made clear by the Joint Parliamentary Secretary to the Ministry of Agriculture that the Government, too, were fully in support of the Bill in principle. Finally, I am informed that the British Veterinary Association—which, as I have already indicated, has been taking a leading part in this matter—has, so far, not been informed of any opposition from any quarter. After the Bill obtained its Second Reading in another place it was carefully scrutinised by the Ministry of Agriculture, in consultation with the Scottish Office and the Parliamentary draftsmen. As a result of that scrutiny, certain amendments were suggested by the Ministry, and these have been incorporated in this Bill.

I now come to the main points in the Bill. First, it repeals the Animals (Anaesthetics) Act, 1919, which I have already shown to be out of date. It then goes on to provide, in Clause 1, that, henceforward, any operation which is performed on any kind of animal, with the exception of birds, fish and reptiles, without the administration of an anaesthetic to prevent the animal feeling pain throughout the operation

"... shall be deemed ... to be an operation which is performed without due care and humanity ..."

within the meaning of the Protection of Animals Act, 1911.

In that Act it is made an offence of cruelty, subject to a minimum penalty of £25 or three months' imprisonment, to submit any animal to any operation which is performed without due care and humanity, so that if and when this Bill becomes law it will be an offence, subject to certain exceptions contained in the First Schedule, to perform any operations upon any animals without an anaesthetic.

Under Clause 1 (2) an operation is defined, and provision is made for the exclusion of certain minor operations set out in the First Schedule. Under sub-section (3) the Minister of Agriculture or the Secretary of State for Scotland is given the power to make alterations to an important paragraph—paragraph 6 of the First Schedule. I understand that this Schedule was drawn up with considerable care by the British Veterinary Association, in consultation with the Ministry of Agriculture. To some extent—and I know that the House will understand this—it is necessary to compromise if a Bill of this kind is to reach the Statute Book and be adequately enforced.

There are some points in the Schedule to which I want to draw particular attention. It exempts an operation involved in any experiment authorised under the Cruelty to Animals Act, 1876, since conditions under which these experiments take place are already controlled by other means. It exempts, for obvious reasons, any operations which are tantamount to first-aid for the purpose of saving life or relieving pain. It exempts the docking of a puppy's tail and the amputation of the dew claws of a dog before its eyes are opened. It exempts any minor operations which would normally be performed by a layman and which, otherwise, would come within the definition of the Bill—artificial insemination, ear punching, etc.—and finally, it exempts the castration of certain male animals up to a certain maximum age.

Some people may think that some of those ages are too low or too high, but if there are any material differences of opinion, I suggest that they can be fully debated during the Committee stage. In arriving at these ages the British Veterinary Association was concerned to ensure, first, a reasonable degree of humanity and, secondly, a reasonable chance of enforceability.

I want to refer, briefly, to the great work which the veterinary profession has accomplished over recent years. This profession, which numbers no more than 5,500, has been largely responsible for eradicating the major killing diseases of our livestock from this country. It has enabled us to build up an immense prestige as the stud farm of the world, and it has played a most valuable part in enabling our dairy industry to increase milk production to its present high level.

Those of us who have anything to do with the country know that veterinary surgeons are always ready to come to our aid at any time of the night or day. It is, therefore, a great pleasure to me to assist this profession by bringing forward this Bill to enable all concerned to take greater advantage of the advances which have been made in veterinary surgery, for which they themselves are mainly responsible.

I have mentioned the details of my Bill. So far as its principles are concerned, I would emphasise that it should go a long way to ensure that the advances which have been made, in recent years, in scientific knowledge about animal anaesthetics shall now be applied, in practice, in this country. The veterinary profession assures us that the time has now come when all painful surgical operations upon animals should be carried out under conditions which will reduce pain to the absolute minimum. It is most desirable that we should help the profession to obtain that object by bringing the relevant legislation up to date, and I hope that the House will be prepared to give this Measure a unanimous Second Reading.

Mr. Somerville Hastings in seconding the Motion referred to the great advances in both human and animal surgery, and the new knowledge and techniques which made this Bill necessary if veterinary surgeons were not to be prevented from exercising their skill to the utmost for the benefit of animals.

Mr. G. H. R. Nugent, Joint Parliamentary Secretary to the Ministry of Agriculture and Fisheries, said, in the course of the debate, it may be for the convenience of the House if I intervene for a minute or two to express the view of the Government on this Bill. I listened with interest and sympathy to the exposition of the purposes and merits of the Bill given by my hon. Friend the Member for Hemel Hempstead (Viscountess Davidson) and I should like to congratulate her on her success in bringing it forward and on doing something which, I think, will commend itself to everybody as being of great value in relieving pain and suffering of animals.

I think it is consistent with the general feeling that we have for animals that we should enlarge the protection that the law gives to them. The fact is that this Bill will help to make, as was said by the hon. Member for Barking (Mr. Hastings), a comprehensive protection for all operations, by requiring an anaesthetic generally and defining only the exceptions. In other words, it does exactly the reverse of what the 1919 Act did, which was valuable in itself. This Bill goes that much further, and I feel sure that it will commend itself to everybody.

The hon. Member for Barking specifically asked me whether the First Schedule interfered with such matters as the making of serums for anti-toxins by drawing off blood from animals. I am advised that it will not. Paragraph 1 of the First Schedule refers to the Cruelty to Animals Act, 1876, which applies only to experiments, and this particular kind of action is not regarded as an experiment; it is a routine matter, and, therefore, it will not be touched by this particular paragraph.

I should say one word about this Schedule. As my hon. Friend has said in introducing the Bill, great care has been taken in consultation with the veterinary profession and the farming interests to secure a proper balance in this Schedule so that this very valuable humane Measure shall not interfere with the practical interests of farming life.

I should like to join with my other hon. Members in paying my tribute to the veterinary profession. It has developed during the last few decades into a profession of very high standing and has done work of very high value not only from the humanitarian point of view, but from the economic point of view in strengthening the efficiency of livestock keeping generally, and this cannot be too highly praised. Their particular concern to extend the protection which this Bill gives to animals is only what we would expect in view of the very fine humanitarian feeling they have shown.

Mr. Frederick Willey said: I should like to join in paying tribute to the veterinary profession. I know that they work quite as efficiently and unselfishly as the medical profession. It is a very real tribute to them that from their own professional bodies they have assisted in promoting this Bill.

What the Bill will do, I believe, is this. It will make legal what is the general present practice of the veterinary profession. I have great pleasure, therefore, in supporting the Bill.

After a number of other speeches, including those by Sir Charles Taylor, Sir Frederick Messer, Sir Thomas Moore, Sir Herbert Williams and Mr. Chuter Ede, the Bill was read a Second Time and committed to the Standing Committee.

* * * * *

Questions

Landrace Pigs

Lieut.-Colonel Bromley-Davenport (February 8th) asked the Minister of Agriculture whether he is aware that, despite the continued ban on the import of Landrace pigs into this country, 32 such pigs have recently been bought from Sweden by Jersey breeders at £100 each and that breeders in the Isle of Man are also now free to buy such pigs; whether it is proposed to place a ban on the import of the progeny of such pigs from Jersey and the Isle of Man; and for how much longer it is intended to continue the ban on the import of Landrace pigs direct into this country.

Sir T. Dugdale: I understand that, following the experimental import of Landrace pigs into Great Britain, the authorities in Jersey and the Isle of Man have permitted, or may permit, similar importations for their breeders. Under the Animals (Landing from Ireland, Channel Islands and Isle of Man) Order, 1933, the progeny of such pigs could enter Great Britain from Jersey and the Isle of Man provided that certain veterinary safeguards were observed. I do not propose to amend that Order. As regards the direct importation of Landrace pigs, I have nothing to add at present to the reply I gave on February 4th to my hon. Friend the Member for Newbury (Mr. Hurd).

Mr. Hurd (February 11th) asked the Minister of Agriculture if, in view of the need to reduce further the cost of bacon pig production in this country and the availability of Landrace pigs standardised for economical bacon production, he will, while keeping all due health safeguards, now use his powers under the Diseases of Animals Act to permit further importations of selected breeding pigs direct from Scandinavia; and to what extent his regulations allow the entry of Landrace pigs by way of the Channel Islands.

Sir T. Dugdale: As I explained in my reply to my hon. Friend on February 4th, the health safeguards include limiting imports of live pigs to what is necessary to meet essential needs. I am considering whether a further import of Landrace pigs is essential. Current regulations permit the importation of pigs from the Channel Islands subject to certain safeguards, but I am sure that, as in the past, I should have the full co-operation of the authorities in seeing that animals whose direct importation into

Great Britain was prohibited were not allowed to be imported through the Channel Islands.

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CALDRA SYSTEM OF NETTING RABBITS

Major ANSTRUTHER-GRAY (February 9th) asked the Secretary of State for Scotland whether he will make a further statement regarding the Caldra system of netting rabbits.

THE JOINT UNDER-SECRETARY OF STATE FOR SCOTLAND (Mr. MCNAIR SNADDEN): Bad weather unfortunately prevented Sir Eric de la Rue from giving officials a practical demonstration of his method of netting rabbits. He did, however, show them how his equipment is used, and they have reported to my right hon. Friend that the Caldra method would be effective on suitable ground. My right hon. Friend is grateful to Sir Eric for his enterprise, and the Department of Agriculture will do what they can to publicise his technique.

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GIN TRAPS AND THE DESTRUCTION OF RABBITS

Captain PILKINGTON (February 11th) asked the Minister of Agriculture the present position in regard to finding an alternative to the gin trap.

Brigadier MEDLICOTT asked the Minister of Agriculture if he will now state what progress has been made in the researches and experiments aimed at evolving a suitable alternative to the gin trap for the destruction of rabbits.

Sir T. DUGDALE: Certain alternative traps have been designed and are being tried out, but none so far has been shown in practice to compare with the gin trap as regards weight, efficiency and price.

NOTES AND NEWS

Diary of Events

Feb. 20th.—Meeting of the Biochemical Society at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, 11 a.m.

Feb. 24th.—Annual General Meeting of the South-Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

Feb. 24th.—Annual General Meeting of the Midland Counties Division, B.V.A., at the Birmingham Medical Institute, 154, Gt. Charles Street, Birmingham, 11.30 a.m.

Feb. 25th.—Spring Meeting of the Dumfries and Galloway Division, B.V.A., in the County Hotel, Dumfries, 2.15 p.m.

Feb. 26th.—University of Liverpool Veterinary Society Annual Ball, in the Students' Union, Bedford Street, Liverpool.

Feb. 26th.—Annual Ball of the Liverpool University Veterinary Society in the Union, Bedford Street, Liverpool, 8 p.m.

Mar. 3rd.—Meeting of the Southern Counties Division, B.V.A., at the Grand Hotel, Bournemouth, 6.30 p.m.

Mar. 5th.—General Meeting of the Society of Practising Veterinary Surgeons, B.V.A., at the Royal Mount Ephraim Hotel, Tunbridge Wells, 2.30 p.m.

Mar. 17th.—Laboratory Meeting of the Royal Society of Medicine, Section of Comparative Medicine at the Royal Veterinary College, N.W.1, 4.30 p.m.

Mar. 18th.—Annual Dinner and Dance of the East Midlands Division, B.V.A., at the George Hotel, Nottingham, 7.15 p.m.

Mar. 20th.—Annual General Meeting of the Biochemical Society in the Department of Chemistry, University College, Gower Street, London, W.C.1, 10.45 a.m.

Mar. 25th.—V.V.B.F. Ladies' Guild: North of Scotland Division, B.V.A., Annual Dance, Aberdeen.

Mar. 26th.—Annual Dinner and Dance of the Yorkshire Division, B.V.A., Parkway Hotel, Leeds.

Sept. 19th—25th.—72nd Annual General Meeting and Congress of the British Veterinary Association at Torquay.

PERSONAL

Births.—BOYD.—On February 1st, 1954, to Rhona (*née* Carlisle), wife of R. P. Boyd, M.R.C.V.S., of Cressbrook, Hassall Road, Sandbach, Cheshire—a daughter.

CRADOCK.—On February 7th, 1954, to Felicity (*née* Snelling) and Geoffery J. Cradock, M.R.C.V.S., of Camberley, Surrey—a son, Mathew.

RAYNE.—On February 12th, 1954, to Pamela, wife of Philip Rayne, M.R.C.V.S., of Langport, Somerset, a daughter—Josephine Mary.

STEELE-BODGER.—On February 6th, 1954, to Anne, wife of Alasdair Steele-Bodger, B.A., B.Sc., M.R.C.V.S., of Pool House, Lichfield, Staffs—a daughter.

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Appointment in the Colonial Veterinary Service.—Mr. F. J. Parker, M.R.C.V.S., has been appointed as a veterinary officer to Uganda.

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S.V.R. OBITUARY

GASKIN, George, Veterinary Practitioner, High Street, Ixworth, Nr. Bury St. Edmunds, Suffolk. Registered November 28th, 1919. Died suddenly February 4th, 1954.

GOLDSMITH, Alec, Veterinary Practitioner, The Old Manor House, Norton, Nr. Letchworth, Herts. Registered January 22nd, 1951. Died February 4th, 1954; aged 55 years.

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TRIBUTE TO CAPTAIN QUINTIN A. STEWART

To mark his retirement from the office of Divisional Veterinary Officer of the Ministry of Agriculture, Captain Quintin A. Stewart, O.B.E., M.R.C.V.S., and Mrs. Stewart were entertained to dinner by the agricultural community of Ayrshire at the Ayr Station Hotel on January 28th. Afterwards a presentation was made by Colonel Sir W. T. R. Houldsworth, BART., C.B.E. The toast of the Veterinary Profession was proposed by Mr. Allan Barr and the reply was made by Mr. J. N. Ritchie, Chief Veterinary Officer. The Guests were proposed by Mr. A. L. Wilson, the President of the Ayrshire Division of the B.V.A. Sir Thomas Dalling, who was unable to be present, sent a message in which he said "Our admiration for these pioneers, these old stalwarts like Quintin, is very great and sincere. The agricultural world owes much to their efforts and to the great work they did in the somewhat difficult days of yore." In the course of the evening the Chairman, Mr. Jacob S. Murray, said that, in addition to honouring Captain Stewart, they were celebrating for the first time the attested County of Ayr.

At a meeting of the Division on February 4th, fresh tributes were paid to Captain Stewart. A presentation consisting of an umbrella and a monetary gift was made on behalf of the Division by Mr. A. L. Wilson. Details of this meeting will be published in the next Supplement to *The Veterinary Record*.

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NEW PRINCIPAL OF WEST OF SCOTLAND AGRICULTURAL COLLEGE

The new Principal of the West of Scotland Agricultural College, Mr. Donald Stewart Hendrie, commenced his duties on Monday, February 1st, in succession to Mr. John Kirkwood, who retired after 40 years' service with the College.

Mr. Hendrie, who is 43, was born at Galston in Ayrshire and was educated at Galston, Kilmarnock, Glasgow University and the West of Scotland Agricultural College. He had a distinguished career at the College, where he was awarded the Weir of Courance Gold Medal, first place medals in his second and final years, as well as the John Speir Memorial Prize in dairying. With the highest aggregate mark in the N.D.A. examinations he took the Ministry of Agriculture and Fisheries Fream Prize.

Mr. Hendrie holds the B.Sc. (Agric.), N.D.A., N.D.D. and the Cambridge Diploma in Agriculture. He attended Ontario Agricultural College, Canada, and Cambridge University School on a scholarship from the Ministry of Agriculture and Fisheries. His previous appointments were Assistant Lecturer in the West of Scotland Agricultural College, District Lecturer in Agriculture in North Yorkshire, County Executive Officer in the North Riding of Yorkshire, and finally Agricultural Adviser to the High Commissioner for the United Kingdom in New Zealand.

DEGREE FOR MR. LAURENCE OGDEN

At a degree ceremony held in the Sheldonian Theatre, Oxford, on December 12th, 1953, Laurence Ogden, M.R.C.V.S., D.V.S.M., was awarded the Degree of Bachelor of Letters. Mr. Ogden's thesis was entitled "A Study of the Incidence of Disease in a Sample of the Cattle Population of Oxfordshire." Mr. Ogden worked in the University Department of Agriculture as a Research Scholar of the Animal Health Trust from 1950 to 1953.

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OPERATION ON A MARMOSET

Members of the profession may have read in the newspapers recently accounts of how a member of the medical profession was called upon to perform a caesarean operation on a marmoset, in the West Middlesex Hospital. Some of the newspapers suggest that this course was taken because veterinary surgeons could not perform the operation. After consultation with the Royal College of Veterinary Surgeons the following statement has been sent to the Press:—

"The attention of the British Veterinary Association has been drawn to reports in various newspapers regarding a caesarean operation by a medical practitioner on a marmoset. From these reports it might be deduced, firstly, that the performing of this operation by a medical practitioner had been advised by a veterinary surgeon at the London Zoo; and, secondly, that members of the veterinary profession were unable to perform this operation.

"The Association is authorised by the veterinary surgeon of the London Zoo, who is also Curator of Mammals, to state that he never advised that this operation should be carried out by a medical practitioner for, under the Veterinary Surgeons Act, 1948, it is illegal with certain minor exceptions, for any person to practise veterinary surgery unless he is a registered veterinary surgeon or practitioner.

"The Association would further point out that in the veterinary profession, as in the medical profession, there exists specialisation and, whilst some veterinary surgeons might very properly decline to undertake a specialised operation of this nature, there are in the London area veterinary surgeons who would have performed this operation quite readily—apart from the veterinary staff of the London Zoo or the Royal Veterinary College and Hospital."

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A.R.C. ACADEMIC AWARDS

The Agricultural Research Council is offering two Veterinary Clinical Fellowships to provide opportunities for suitably qualified veterinary clinicians and pathologists of Ph.D. standing to continue research for two or three years. The Fellowships will be awarded for one year in the first instance and will be renewable annually up to a maximum of three years; they will carry a stipend of £850 a year.

The Council is also continuing to offer post-graduate research studentships and training grants to holders of veterinary qualifications and a small number of veterinary training grants to enable honours graduates in one of the basic sciences to read for a veterinary qualification after taking their science degrees. Applications for these awards should reach the Council by March 20th.

Further details of these awards, together with information about openings in agricultural research and advisory work, are contained in a pamphlet entitled "Careers in Agricultural Research—Training Grants, Studentships and Fellowships awarded by the Agricultural Research Council, 1954," obtainable on application to the Secretary, Agricultural Research Council, Cunard Building, 15, Regent Street, London, S.W.1.

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COLONIAL VETERINARY SERVICE

Representatives of the B.V.A. had a meeting at the Colonial Office on Tuesday, February 16th, with the East Africa Salaries Commission and were favourably received. The Association's representatives were the President (Mr. Alex. Thomson, M.R.C.V.S.), the Chairman of the B.V.A. Overseas Committee (Dr. J. Carmichael, C.M.G., M.R.C.V.S.) and the General Secretary.

ASSOCIATION OF VETERINARY STUDENTS

Annual Conference at Bristol

The Annual Conference of the Association of Veterinary Students was held in Bristol from January 28th until January 30th, and was attended by about 150 visitors representing all the colleges of Great Britain and Ireland, together with representatives from Germany, France, Holland, Finland and Yugoslavia.

The Conference was opened by Sir Philip Morris, Vice-Chancellor of Bristol University, and was addressed by the Director of Veterinary Studies, Professor F. Blakemore. Talks were given by Dr. W. P. Blount, of B.O.C.M., on "Veterinary Careers in Industry," and by Mr. A. D. J. Brennan, Deputy Chief Veterinary Officer, on "The Ministry as a Veterinary Career." A student paper, "Veterinary Folklore in Ireland," was given by Mr. P. Rhatigan, of Dublin. The President of the Royal College of Veterinary Surgeons, Professor R. E. Glover, addressed the Conference on the subject of "The Veterinary Student and National Service."

Unfortunately the bad weather caused the Rugby and Soccer tournaments to be cancelled, but the table tennis and shooting events were held, and both were won by the Royal Veterinary College. The Conference also included visits to the Bristol University Field Station at Langford and to the Severn Wildfowl Trust. His Grace the Duke of Beaufort was to have given a talk on the Badminton Three-day Event, but he was unable to reach Bristol owing to the snow. The Conference was concluded with the annual dance of the Centaur Society.

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ARGENTINE CATTLE PURCHASES AT PERTH

At the annual sales which ended just over a week ago, £54,000 worth of cattle were sold to Argentina. A total sum of £219,300 was realised at the sales, and in a single day there was a turnover of 100,000 guineas. Forty-four bulls and one heifer were sold at prices of over £1,000 each and the average per head was nearly £200 more than last year.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Lancs.—The Tannery, Lostock Hall, Preston (Feb. 10).

Nottingham.—Tall Trees Farm, Pasture Lane, Ruddington (Feb. 13).

Somerset.—Mount Pleasant, Galhampton, Yeovil (Feb. 12).

Foot-and-Mouth Disease:

Surrey.—Clarkes Croft, Bletchingley (Feb. 13).

Fowl Pest:

Devon.—Mons Hall, Dowland, Dolton, Winkleigh (Feb. 11).

Gloucs.—Highleadon, Nr. Gloucester (Feb. 10).

Lancs.—Ferns Bank, Town Lane, Much Hoole, Preston; Nut Lane Farm, Simister, Prestwich (Feb. 10); Oak House, Hall Lane, Longton, Preston; Heywood Farm, Simister (Feb. 11).

Lincs.—4, Council Houses, Sutton-St. James, Holbeach; Helm Leigh, Kyme Road, Heckington, Sleaford; Boughton Farm, Boughton, Nr. Sleaford; The Chestnuts, Sutton-St. James, Holbeach (Feb. 11); Chapelgate, Sutton-St. James, Holbeach; The Cottage, Howell Road, Heckington, and The Grange, Kirkby-la-Thorpe, Sleaford (Feb. 14).

London.—185, Kennington Road, S.E.11. (Feb. 10).

Norfolk.—Old Farm, Cawston, Norwich (Feb. 11).

Suffolk.—Mere Close Farm, Haughley, Stowmarket (Feb. 12).

Surrey.—Poussin Farm, Chertsey (Feb. 10).

Worcester.—Raven Cottage, Tanworth Lane, Beoley, Redditch (Feb. 10).

Swine Fever:

Cambs.—Waterbeach Road, Landbeach (Feb. 10); New Farm, Elsworth; Gaul Road Farm, March (Feb. 13).

Dorset.—Middle Farm, Buckland Ripers, Weymouth (Feb. 11); Higher Holt Farm, Melbury Osmond (Feb. 12); Royal Manor Farm, Weston Road, Portland (Feb. 13).

Hants.—Waydown Farm, Chase Lane, Lindford, Bordon (Feb. 13).

Kent.—Woodlands Farm, Downs Road, Southfleet, Gravesend (Feb. 11).

Lancs.—7, Woolton Street, Woolton, Liverpool (Feb. 12).

Leics.—Homestead Farm, Hoby, Nr. Melton Mowbray; The Sycamores, Richmond Road, Ibstock (Feb. 13).

Lincs.—Fen Farm, Stainfield, Wragby (Feb. 10).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement

THE COLLECTION OF BLOOD SAMPLES FROM PIGS

Sir,—Many of your readers will know that nearly 1,000 pigs were exported from this country to Yugoslavia towards the end of 1953. One of the conditions of acceptance of these animals was that they should pass a blood agglutination test for the presence of *Brucella* antibodies, and this led to a number of enquiries being received at the Cambridge Veterinary Investigation Centre as to the best way in which to take blood samples for this purpose. These enquiries have prompted the writing of this letter.

The following method has been used extensively by one of us (A. O. B.) in the course of experimental work on virus pneumonia of pigs. The pig is first tied to a post by means of a noose round its upper jaw. To prevent slipping, the rope should be behind the upper canines. Most pigs tied in this way will exert a steady backwards pull on the rope, with little or no struggling. A rubber band is then placed round the ear. The band should be moderately tight and as close as possible to the head. The ear is cleaned with spirit, slapped to raise the veins, and a hypodermic needle inserted into one of the ear-veins, the needle being directed towards the head. Insertion is facilitated by the use of a Record-type syringe with an eccentric nozzle. The syringe is then detached and the blood allowed to run directly into a tube or bottle. The rubber band should be removed before the needle is withdrawn, to prevent the formation of a haematoma. A short needle (*e.g.*, 0·8×12 mm.) has been found satisfactory. If it is necessary to collect the blood aseptically a dry, sterile syringe is used into which the blood is slowly drawn. Strong suction should be avoided since this is likely to collapse the vein and may also damage the erythrocytes, which are particularly fragile in pigs.

A technique similar to that described above has been used in the field with very satisfactory results. On one occasion some 25 samples were taken in about 80 minutes, most of the time being spent in securing the pigs. The veins "came up" well despite the fact that the work was done outside in cold weather.

Among alternative methods, those of collecting from the cut end of the tail or from a "snicked" ear vein are apparently widely used in the field. These methods have marked disadvantages. It is impossible to obtain uncontaminated samples or to avoid some haemolysis. Furthermore, if the incision is small, collection tends to be slow and clotting frequently occurs before the blood reaches the bottle. These disadvantages are especially apparent when larger quantities of blood are required, such as for chemical analysis or vitamin A estimation. If a larger incision is made to obtain a greater flow of blood it is often difficult to control the haemorrhage afterwards.

We are, of course, aware of the method of collection from the anterior vena cava, but in our experience this involves sufficient risk to make it unsuitable for widespread use in the field. It is also impracticable in the larger pig.—Yours faithfully, A. O. Betts, Department of Animal Pathology, Milton Road, Cambridge, and E. A. Gibson, Ministry of Agriculture and Fisheries, Veterinary Investigation Centre, Cambridge. *February 6th*, 1954.

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R.C.V.S. ELECTIONS

Sir,—It was recently brought to the notice of a combined meeting of Divisions of the B.V.A. in London by Professor Glover, President of the R.C.V.S., that less than 30 per cent. of the electorate of the Royal College of Veterinary Surgeons exercised their right to vote. It is a curious trait of human character that no matter what may be the true worth of an article, if it can be bought cheaply, it is rarely valued by the purchaser. Is it possible that the raising of the annual fee may have the happy result of awakening the electorate of the R.C.V.S. from its apathy, and result in a much heavier poll than in former years?—Yours faithfully, J. B. White, 49, Endless Street, Salisbury, Wilts. *February 9th*, 1954.

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THE BRITISH VETERINARY CODEX

Sir,—I would like to place upon record my gratitude to the Pharmaceutical Society of Great Britain and to all who were associated with them in the production of the British Veterinary Codex. In my view, this publication is a very prominent landmark in veterinary literature. I am vaguely aware that there does exist an immense amount of published work on drugs, biologicals, and so on, but I, like so many other members of our profession, have neither the time nor the opportunity to carry out a search for what I require.

In the past I did the best I could by using the latest publications of the British Pharmaceutical Codex in conjunction with veterinary text-books—but the difficulties presented are only too obvious; the British Veterinary Codex has resolved these difficulties for me, and I feel sure that it will do the same for the whole of the veterinary profession.—Yours faithfully, J. P. Pickering, Orchard House, Priestpopple, Hexham, Northumberland. *February 8th*, 1954.

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THE CHARGE OF THE LIGHT BRIGADE, BALACLAVA

Sir,—Private Penn's horse was wounded in the shoulder in one of the many encounters he had with the enemy, on October 25th, 1854; he himself belonged to the 17th Lancers and, together with his horse, survived the great day. Private Penn was subsequently described as one of the most distinguished men, having received 11 decorations. The only veterinary officer to survive the ordeal was veterinary officer Towers, and it was he who removed the bullet from the shoulder of Penn's horse whilst the animal was still in action.

This must be one of the first recorded veterinary operations in battle, and I wonder if any gentleman can add to this information. My authority was the first Lord Tredegar, who, as Captain Morgan, 17th Lancers, witnessed most of Penn's remarkable valour together with the operation on his horse.—Yours faithfully, Ivor Hughes, Coleshill, Warwickshire. *February 11th*, 1954.

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A UROGENITAL ANOMALY IN THE CAT

Sir,—In his Clinical Communication on the spaying of a three-month-old kitten under nembutal anaesthesia, *The Veterinary Record*, February 13th, 1954, Mr. K. J. Hill is unable to decide the cause of death because, upon *post-mortem* examination, there was no evidence of haemorrhage. After 30 minutes' fruitless search for a non-existent right uterine horn, might one suggest surgical shock as the answer?—Yours faithfully, Barbara Smith, Home Farm Lodge, Sulhamstead, Berks. *February 14th*, 1954.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th January, 1954 ...	13	—	108	—	61
Corresponding period in—1953	68	2	86	—	41
1952	25	11	21	—	42
1951	17	—	131	2	35

Tuberculosis Order of 1938

The number of bovine animals slaughtered under the Tuberculosis Order of 1938 during the period October 1st to December 31st, 1953, was 521.